REMARKS

Applicant respectfully requests reconsideration. Claims 1, 3, 5-11, 16-18 and 27-32 were previously pending in this application. Claims 10, 16-18 and 30-32 are withdrawn from consideration. By this amendment, Applicant is canceling claims 3, and 8 without prejudice or disclaimer. Claims 1, 5-7, 9, 11, and 27 have been amended. No new claims have been added. As a result, claims 1, 5-7, 9, 11 and 27-29 are pending for examination; claims 1 and 27 are independent claims. No new matter has been added.

Submitted with this Amendment is an additional document entitled: "Declaration under 37 C.F.R. 1.132 of Dr. Rob Taft," referred to as Declaration.

Interview Summary

Items 1 and 4 on pages 2 and 3 of the Office Action indicate that 35 U.S.C. § 103(a) is the basis for all the obviousness rejections set forth in the Office Action. However, items 2 and 14 on pages 2 and 4 of the Office Action indicate that the claims 1, 3 and 27-29 have been rejected as being anticipated. In a phone call on April 28, 2010 with Applicant's representative (undersigned), Examiner Plucinski clarified that the claims have been rejected under 35 U.S.C. §103(a), and not under 35 U.S.C. §102(b). Examiner Plucinski also stated that she would issue a correction to the Office Action confirming that 35 U.S.C. § 103(a) is the basis of the claim rejections. On May 3, 2010, Examiner Plucinski issued an Interview Summary stating that the claims were rejected under 35 U.S.C. § 103(a), and not § 102(b). Applicant has addressed the rejections as having been made under 35 U.S.C. § 103(a).

Rejections Under 35 U.S.C. § 103

Claims 1, 3, 5-9, 11 and 27-29 are rejected under 35 U.S.C. §103(a) as being anticipated by The Jackson Laboratory (www.jax.org) in view of Nomura (US 2003/0237104). As noted above, this is a nonobviousness rejection and not a rejection under 102(b).

Without conceding the correctness of the rejection, and solely in an effort to expedite prosecution, Applicant has amended claims 1 and 27. Support for this amendment can be found, for example, on pages 13-15 of the application as filed.

According to the Examiner, "[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made, to modify The Jackson Laboratory, to have the embryos which are implanted into mice to produce offspring, be produced by superovulating the female and IVF, as disclosed by Nomura, in order to increase Quality Assurance for the offspring" (page 3 of the Office Action).

Applicant respectfully disagrees. Discussion of the rejection follows and is supported by and includes reference to the Declaration under 37 C.F.R. 1.132 of Dr. Rob Taft, the Director of Reproductive Sciences at The Jackson Laboratory. As evident from his Declaration, Dr. Taft disagrees with the Examiner's conclusion that it would have been obvious to modify the teachings of The Jackson Laboratory by superovulating the female and IVF, as disclosed by Nomura, to arrive at the instant invention. Further, Dr. Taft states in his Declaration: "What is described in the application and what we do now relies on a core process that uses assisted reproductive technologies (ARTs) as the basis for providing a plurality of services. This has been a fundamental shift and a key part of efforts to reduce the time and cost of managing mouse colonies. We can rescue, rederive, cryopreserve and rapidly expand colonies by varying the scale and order of events in this core process. The results have been dramatic, reducing the time and cost of existing projects by at least 50% compared to the processes referenced on the web site from 2000 and providing us with a foundation for additional services like the rapid expansion of colonies using IVF that did not exist at the time" (page 6, Item 17).

Applicant respectfully submits that the Examiner has not met the requirements set forth in MPEP 2143 to establish a *prima facie* case of obviousness. MPEP 2143(A) states that to reject claims as obvious based on a rationale of combining prior art elements according to known methods to yield predictable results, "Office personnel must articulate the following:

(1) a finding that the prior art included each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference;

(2) a finding that one of ordinary skill in the art could have combined the elements as claimed by known methods, and that in combination, each element merely performs the same function as it does separately;

(3) a finding that one of ordinary skill in the art would have recognized that the results of the combination were predictable; and

(4) whatever additional findings based on the Graham factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness."

MPEP 2143 states that, "[i]f any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art."

The Examiner has not established that the prior art includes each element claimed, as required under MPEP 2143 A(1). The prior art cited by the Examiner lacks several elements recited in the instant claims as amended. First, as acknowledged by the Examiner on page 2 of the Office Action, The Jackson Laboratory website fails to disclose services selected from rapid production of a mouse colony and rapid production of synchronized progeny. Nomura teaches methods for the development of mutant animals, including genetically engineered animals and those carrying spontaneous mutations, as human disease models (Abstract). According to Nomura, the use of the superovulation procedure for animal production "significantly shortens the period required for changing the genetic background of the mutant mice, such as transgenic (Tg) mice, to that of other inbred strains" (paragraph 0114). In contrast, the claims as amended are directed to methods that allow rapid production of a desired number of synchronized progeny with the same genotype. There is no change in the genetic background of the mice produced using the instantly claimed methods.

Second, the cited art does not teach that the desired number of progeny can be produced in less than half the time when compared to production by conventional mating (half the time that is required when conventional mating is used). Neither The Jackson Laboratory website nor Nomura teaches or discloses the claimed method, by which a desired number of progeny is produced in less than half the time when compared to conventional mating. With regard to Nomura, the Examiner contends that "superovulating a mouse, would cause rapid production, due to the fact that the specification discloses this as producing the rapid production, as well as

the fact that if superovulated the female mouse would produce an egg faster, which would be rapid" (pages 3-4 of the Office Action).

This is not correct. Superovulation causes the maturation of an increased number of oocytes, but not faster production of an egg, as Dr. Taft explains in his Declaration (page 2, Item 5). In fact, as Dr. Taft states in his Declaration, "***the approach*** described by Nomura of using immature females only reduces the generation interval, but it does not produce a production colony more quickly and ***as described by Nomura would slow the rate at which a production colony would be developed*** as the future reproductive potential of the females is lost" Emphasis added. (Page 3, Item 6). In contrast, the claimed methods produce a large cohort of mice (synchronized mice) useful for various purposes, such as research. The cited references do not teach or disclose the instantly claimed methods for rapid production of synchronized progeny.

Additionally, the rejection fails because the Examiner did not establish that one of ordinary skill in the art could have combined the elements as claimed by known methods, and that in combination, each element merely performs the same function as it does separately, as required under MPEP 2143 A(2). As discussed above, the cited art does not contain each element of the claimed invention and, thus, the skilled artisan could not have arrived at the current invention by combining the cited art. IVF was known in the art, but, as Dr. Taft explains, it was not being used as part of the cryopreservation service at the time, as the technology for cryopreserving embryos at the 2-cell stage was not in use yet (Declaration, page 5, Item 14).

Further, the rejection fails because the Examiner did not establish that one of ordinary skill in the art would have recognized that the results of the combination were predictable, as required under MPEP 2143 A(3). Page 3 of The Jackson Laboratory website recites several services such as cryopreservation, rederivation, special surgery service, mouse tissues and organs and mouse genomic DNA. There is no specific suggestion or guidance in the cited art on how these services could be used to provide rapid expansion of a mouse colony and rapid production of synchronized progeny. Dr. Taft notes in his Declaration: "At the time of filing The Jackson Laboratory was focused on distributing mice and offered only limited services as listed on the website (2000). The 2000 website does not provide technical details." (page 4, Item 12). A skilled artisan would not have had a reason and would not have been motivated by any reasonable expectation of success to expressly select one or more of these services to provide

rapid production of synchronized progeny. The cited art does not teach methods for rapid production of synchronized progeny by utilizing a core process, as instantly claimed. In the absence of such a teaching, one of skill in the art would not have known how to produce predictable results in producing a large cohort of synchronized mice (until the work of Applicant).

The Examiner continues to reject claims 21, 22-24 and 26 in items 7, 8, and 10 of the Office Action (pages 3-4). These claims were cancelled without prejudice or disclaimer in the Amendment dated December 7, 2009, and are no longer pending in the application. The rejection is moot.

With respect to claim 27, the Examiner maintains that "the system only requires three of the modules, therefore, how can four then be utilized?" (page 4 of the Office Action). Applicant respectfully submits that claim 27 was amended in the Amendment dated December 7, 2009 to clarify that at least three modules are utilized. The Examiner also continues to assert that claim 29 comprising a live animal module is directed to an unselected species of the Markush group in claim 27. Applicant respectfully disagrees. Applicant was not required to make a Markush group species selection for claim 27. The modules discussed in claim 27 were not identified as patentably distinct species in the Restriction Requirement dated March 10, 2009, and Applicant was not required to elect three modules for claim 27. Clarification is respectfully requested. Even if there had been an election required, Applicant respectfully submits that the members of the Markush group are sufficiently few in number that a search and examination of the entire claim can be made without serious burden (MPEP § 803.02).

In view of the above arguments, withdrawal of the rejections is respectfully requested.

CONCLUSION

A Notice of Allowance is respectfully requested. The Examiner is requested to call the undersigned at the telephone number listed below if this communication does not place the case in condition for allowance.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, the Director is hereby authorized to charge any deficiency or credit any overpayment in the fees filed, asserted to be filed or which should have been filed herewith to our Deposit Account No. 23/2825, under Docket No. J0227.70001US01.

Respectfully submitted,

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Docket No.: J0227.70001US01
Date: June 4, 2010

Docket No.: J0227.70001US01
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Robert Taft et al.
Serial No.:	10/772,993
Confirmation No.:	5388
Filed:	February 5, 2004
For:	METHODS AND SYSTEM FOR MANAGING MOUSE COLONIES
Examiner:	J. A. Plucinski
Art Unit:	3629

Certificate of Electronic Filing Under 37 CFR 1.8
I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with § 1.6(a)(4).

Dated: ~~May 27, 2010~~ June 4, 2010 cp. Signature: Crena Pacheco (Crena Pacheco)

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER 37 CFR 1.132

1. I, Rob Taft, am Director of Reproductive Sciences at The Jackson Laboratory since 2004. I have worked in The Laboratory Reproductive Sciences Department since 2001. I received my Ph.D. in 1999 from West Virginia University, Morgantown, WV working on Reproductive Physiology As postdoctoral fellow I worked under Prof. John Eppig in reproductive sciences. I have published over 10 papers and reviews in the field of reproductive sciences and mouse management, and have been invited speaker on this topic at 4 international meetings. A copy of my Curriculum Vitae is attached as Exhibit 1.

2. I have read U.S. patent application 10/772,993 (Taft et al.), the pending claims and the Office Actions dated August 06, 2008 and March 04, 2010, including the cited Nomura reference (Nomura) and The Jackson Laboratory website from 2000-2002, "The Jackson Laboratory (www.jax.org)" in this document.

3. I disagree with the conclusion of the examiner that claims 1, 3, 5-9, 11 and 27-29 are obvious over The Jackson Laboratory (www.jax.org) in view of Nomura. Nomura is describing a method of super speed congenics with the goal to produce mice of uniform genetic and microbiological quality. Speed congenics, also known as marker-assisted breeding, refers to a breeding method to transfer a genetic mutation, a transgene or a knockout region from one genetic background (donor strain) to another genetic background (recipient strain). This was done traditionally by a minimum of ten backcrosses, which takes about three years. In the case of speed congenics the offspring are screened using single-nucleotide-polymorphism (SNP) markers to identify the desired inbred background and only offspring with the highest percentage of recipient SNP markers are used for backcrossing. This reduces the number of backcrossed needed to five, and reduces the time to generate a congenic strain to 15-19 months.

4. On pages 4 and 5 Nomura describes systems to ensure the same genotype, phenotype and dramatype and standardization of animals. He particularly describes genetic quality assurance using the super speed congenic approach and microbiological assurance. Nomura does not disclose a method to produce rapidly a large cohort of animals which is synchronized in age. Such a cohort of age synchronized animals is suitable for in vivo studies, especially pharmacokinetic, efficacy and toxicity testing. I disagree with the Examiner's interpretation of Figure 4 and [0113-0117] by Nomura. This paragraph describes the use of IVF and superovulated females to enhance speed congenics, i.e. transfer of a defined genetic locus to a different animal strain. During this procedure only a small number of animals is needed and the goal is to obtain a founder pair with specific genetic qualities different from the original mouse strain. In contrast, the Taft et al. application describes a system for rapid animal colony expansion using IVF, for the purpose of generating a large age-synchronized cohort of mice of the same genetic background and not to generate a new congenic mouse strain with a defined new genetic background different from the founder mice, as is the goal of Nomura. In summary, the method of Taft et al. has a very different outcome when compared to Nomura: the method of Taft et al. produces a large cohort of synchronized mice of the same genetic background ant the method of Nomura results in a small colony of mice with a new genetic background.

5. I disagree with the Examiner's interpretation that superovulating a mouse causes rapid production. Superovulation causes the maturation of an increased number of oocytes, but not faster production of an egg as the Examiner states. Superovulation alone does not teach how to produce a large age-synchronized cohort of mice more rapidly.

6. Further, the approach described by Nomura of using only immature females reduces the generation interval, but it does not produce a production colony more quickly and as described by Nomura would slow the rate at which a production colony would be developed because the future reproductive potential of the females is lost.

7. Nomura teaches that the production needs would be met through conventional breeding practices, as can be concluded from his description on page 7: "It usually takes tens of months to establish a production colony by natural impregnation. The cryopreservation system for its pedigree line in the nuclear colony, as well as the bulk preservation system in the expansion and production colonies, reduce the risk of accidents, such as contamination in the planned production, or other problems which lead to the discontinuance of production."

8. Thus, Nomura teaches that the production needs would be met through conventional breeding practices. Neither the services described in the cited Jackson materials nor in Nomura address the production of large cohorts of animals for testing.

9. The Jackson Laboratory, Page 3, lists a number of services including the development of congenic strains and cryopreservation services. This page does not list a service for rapid expansion of a mouse colony or rapid production of synchronized progeny. Further this is a list of individual, stand-alone services, not a combination or integrated process. In the patent application an integration of individual methods to a core process or platform is described to create efficient, scalable system adaptable to the customer's need.

10. On page 3 of the Office Action, the Examiner notes: "The Jackson Laboratory discloses (page 13) that the laboratory operates a frozen mouse embryo repository which preserves important

stocks and strains of mice and upon request the strains can be thawed and carried to full term by foster mothers. This indicates the breeding services are a form of IVF. The claims are directed to ordering and providing services, not a new in-vitro fertilization method. Therefore whatever method used to produce the embryo and breed the mouse is considered to be non-functional descriptive material, due to the fact that the actual steps of receiving an order and providing services are performed the same regardless of the specific method of in-vitro and what stage the embryo is harvested. Thus this descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, ..."

11. I disagree with the conclusion of the Examiner that breeding services are a form of IVF, and further that a frozen mouse embryo repository is part of a breeding service. A frozen embryo repository is in the field not considered a breeding service, but rather a storage system to preserve and archive mouse strains over a long period of time and to enable the resurrection of a mouse strain in the future. IVF is also not viewed as a breeding service, as it is a method whereby oocytes are fertilized by sperm outside of the body (in vitro in a culture dish). Operating a frozen mouse embryo archive does not imply nor require the use of IVF. At the time of the Jackson website disclosure, IVF was not used as a method for producing embryos for cryopreservation at The Jackson Laboratory. The embryos were isolated from pregnant mice and cryopreserved thereafter. However, in the art, a breeding service means propagation of a live strain using live mice.

12. At the time of filing The Jackson Laboratory was focused on distributing mice and offered only limited services, as listed on the website (2000). The website does not provide technical details. As used on the 2000 website, the term Custom Breeding Services meant breeding of live mice for a customer and involved an importation program. The combination with the importation derived from the need to provide mice with a high health status (specific pathogen free (SPF) status).

13. The importation program consisted of rederivation of the mice and health status verification. The rederivation asked to receive 3-4 male mice and 6-8 female mice per mouse strain to perform

hysterectomy late-term fetuses and fostering such to surrogate mothers. While embryo transfer and IVF were known as a possibility for rederivation, such was not performed routinely at The Jackson Laboratory at that time. I would like to emphasize that the goal of rederivation is to change the health status of a mouse colony from so-called "poor" to a "high" health status and usually only a few mice are needed to restart a colony. Rederivation is not used to generate large synchronized cohorts of mice useful for a study.

14. The cryopreservation services of The Jackson Laboratory at the time of filing relied on mating mice and flushing embryos for embryo production as indicated by "collection, freezing, and storage of 8-cell embryos". The embryo cryopreservation method in use at the time was not compatible with the use of in vitro fertilization. So, although IVF was known in the art it was not being used as part of the cryopreservation service at the time as the technology for cryopreserving embryos at the 2-cell stage was not in use yet. It is important to know that the cryobiological characteristics of embryos vary among species and among stages of embryo development and that the cryopreservation methods for 2-cell stage embryos needed to be validated before such could be implemented at large scale. While the cryopreservation services include rederivation and colony expansion, it needs to be clarified that rederivation and colony expansion were performed before cryopreservation. In detail as a first step the submitted mice were rederived to establish a colony with a high health status (SPF). Then this colony was bred to obtain sufficient female and male mice to be mated with the goal to obtain sufficient embryos for cryopreservation. Since the embryo yield is about 5-10 embryos/pregnant females and the average recovery yield for live born from cryopreserved embryos is about 30 % with high variations between mouse strains, it becomes clear that a minimum 20-30 females are needed to obtain sufficient pregnant females to create a cryopreserved embryo stock.

15. I like to emphasize that the invention as described in the patent application was neither disclosed nor practiced by The Jackson Laboratory in 2000 and was not obvious given the state of the art at the time. As someone who was at The Jackson Laboratory in 2000 and engaged in the

development of assisted reproductive technologies in mice, I think I can provide perspective on the services as well as the state of the art at the time

16. What is described in the application and what we do now relies on a core process that uses assisted reproductive technologies (ARTs) as the basis for providing a plurality of services. This has been a fundamental shift and a key part of efforts to reduce the time and cost of managing mouse colonies. We can rescue, rederive, cryopreserve and rapidly expand colonies by varying the scale and order of events in this core process. The results have been dramatic, reducing the time and cost of existing projects by at least 50% compared to the processes referenced on the web site from 2000 and providing us with a foundation for additional services like the rapid expansion of colonies using IVF that did not exist at the time.

17. This was a clear need we saw at the time this application was filed. The majority of mouse strains are now either maintained as cryopreserved embryos or as small colonies. This is the only economical way for such specialty mouse strains. The unfortunate consequence is that it takes many months of breeding to expand a colony to the point that it can produce the animals needed for an experiment. The service and process described in this patent application go beyond the services described by The Jackson Laboratory website and the process disclosed by Nomura. The referenced patent application is addressing the challenge of producing enough animals for an experiment when only a small nucleus colony is available. It does so by using different processes than those described by Nomura or the services offered by Jackson, alone or in combination.

18. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and, further, that these statements were made with the knowledge that willful false statements are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the above application and any patent or application related thereto.

Robert Taft

Date 6/3/2010